

# Glutathione

## Biotech Edge

Harnessed through precision microbial fermentation and enzymatic synthesis, Glutathione embodies the essence of advanced antioxidant biotechnology. This naturally occurring tripeptide is available in three biotechnologically refined variants: L-Glutathione (Reduced), L-Glutathione (Oxidized), and Liposomal Glutathione. Each variant offers unique molecular performance, designed for targeted efficacy and enhanced formulation flexibility. Through its bioengineered purity and optimized bioavailability, Glutathione supports the skin's intrinsic renewal processes, transforming cellular defence into luminous vitality.



Glutathione is a multifunctional tripeptide known for improving luminosity, refining skin tone, and strengthening defence against oxidative stress. By modulating melanin pathways and neutralizing free radicals, it helps restore uniformity and radiance. Biotechnological production ensures high purity, stability, and safety, while the availability of three distinct variants allows formulators to select the ideal format for desired performance and delivery systems in advanced skincare formulations.

### PRODUCT DETAILS

INCI name:

**Sodium Hyaluronate**

Appearance:

**White to off-white crystalline powder**

Production:

**Enzymatic & fermentation-based**

Recommended dosage:

**0.1 – 2.0% depending on formulation type  
(serums, creams, gels, sheet masks)**

Variants Available:

**L-Glutathione (Reduced), L-Glutathione (Oxidized), Liposomal Glutathione**



**Anti-Ageing**



**Skin Brightening**



**Spot-correcting**

### Applications:



Skin-brightening  
serums and creams



Anti-ageing  
formulations



After-sun recovery  
and soothing gels



Hyperpigmentation and  
spot-correcting solutions



Pre and post-procedure  
dermatological care

## Key Features

- Derived from vegan sources using advanced microbial bio-fermentation
- Biotech-stabilized antioxidant that supports continuous cellular protection
- Free from allergens, heavy metals, and toxic residues
- Clean-label, eco-conscious ingredient supporting next-generation dermocosmetic concepts
- Formulators can customize their finished formulations to harness the advantage of our L-Glutathione product variants:

Variant	Advantages	Points to Consider
L-Glutathione (Reduced)	Active form that demonstrates immediate efficacy upon application	Hydrophobic molecule with limited penetration and surface stability
L-Glutathione (Oxidized)	Less hydrophobic with improved penetration and stability	Requires additional time to convert into active reduced form for displaying efficacy
Liposomal Glutathione	Encapsulated in lipoidal liposomes (50–150 nm) with highest stability and delivery potential	Formulation may require emulsifier compatibility adjustment

## What it Brings to Your Formulation

- **Stable, fermentation-derived antioxidant suitable for clean and natural-positioned skincare**
- **Water-soluble and easy to incorporate into serums, gels, and emulsions**
- **Compatible with sensitive-skin formulations due to excellent skin tolerance**
- **Combines brightening and anti-ageing performance in one multifunctional ingredient**
- **Provides flexibility to choose among three Glutathione variants, enabling formulators to optimize efficacy, stability, and delivery performance**

## Efficacy Studies

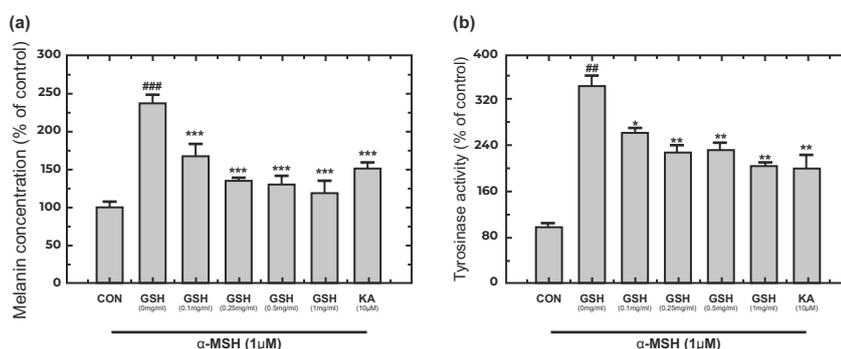


Fig 1: L-Glutathione reduced (GSH) was found effective in highly significant reduction of melanin (a) and inhibition of tyrosinase (b) in vitro in  $\alpha$ -MSH stimulated B16F10 cells (mouse skin cells). Compared to Kojik acid (positive control), GSH was found better in melanin reduction and had comparable efficacy for inhibition of tyrosinase activity [1].

## Clinically Proven Benefits:

- Demonstrates antiaging property through its excellent antioxidant potential
- Neutralizes ROS generated by UV and Pollution to protect skin cell damage.
- Modulates the distribution of melanin to reduce dark spots
- Reduces melanin synthesis to impart skin brightening effects

Reference:

[1] Lee, Yechan, et al. "Odorless glutathione microneedle patches for skin whitening." *Pharmaceutics* 12.2 (2020): 100